Thermo-electric properties of ...

des and to find the composition of oxides which would be stable in vacuum at operating temperatures. A tungsten tape, cleaned by heating in vacuo, was used as the base. The temperature was being determined by a tungsten iridium thermo-couple. The process of activation of cathode consisted of prolonged heating with the outflow of emission current, starting with the temperature corresponding to a low emission 10^{-8} - 10^{-7} ampere^2 and ending at the temperature beyond which the emission started to fall due to the increases work function φ. After the activation has been finished, the emission was measured within a wide range of temperatures after increasing it and decreasing until a stable and reproducible emission current was obtained. All analyzed substances had a minimum of the work function, corresponding to that of a simple model of an n-type semiconductor. The thermoelectric properties of barium hafnates and rhenates as obtained in the experiment are given in tabulated form. The results obtained show that as compared with those of tungstenates and even tantelates of barium, the rhenates, and in particular hafnates of barium have somewhat better emission properties. It is stated in conclusion, however, that until the above substances can

Card 2/3

29327
S/109/61/006/010/026/027
D201/D302

Thermo-electric properties of ...

be recommended for use in thermal emission cathodes, further investigations into their evaporating and thermal stability properties have to be carried out. There are 1 table, 2 figures and 1 Soviet-bloc reference.

SUBMITTED: June 15, 1960

Card 3/3

30298
S/109/61/006/011/013/021
D201/D304

26.1640

AUTHORS: Trigubenko, V.A., and Tsarev, B.M.

TITLE: Thermionic emission properties of hexaborides and of other injection-type structure compositions

PERIODICAL: Radiotekhnika i elektronika, v. 6, no. 11, 1961, 1900 - 1905

TEXT: In the present article the authors give the results of their investigations into the thermionic emission properties of hexaborides of certain rare earth metals (La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Er,), which they undertook to confirm and explain the discrepancies in the values of their emission constants A and work functions φ_0 as published in literature. The hexaborides were deposited on a tantalum wire, coated previously with a calcinated layer of tantalum powder. The thickness of both the hexaboride and tantalum powder layers was accurately controlled by means of a microscope МИМ-7 (MIM-7). The cathode thus prepared was tested in cylindrical diodes with triple anodes. The diodes were evacuated using an oil dif-

Card 1/4

Thermionic emission properties ...

fusion pump and a liquid introgen trap. The cathode temperature was measured by means of the micropyrometer МОП-48 (МОР-48). The vacuum was kept at 10^{-7} - 10^{-6} mm Hg, the barium gatter being vaporized after sealing. The work function φ_0 and the emission constant A were determined from the graphs of Richardson's formula, by measuring the density of the emission current j_e for several temperatures (900 - 1100°C). The results of measurements of φ_0 and A for a TbB_6 cathode are given in Fig. 1. It may be seen that the values of φ_0 and A, obtained at various instants of the cathode operation, show a good linearity of function $\lg A = f(\varphi_0)$ and that the values obtained for several cathodes form a certain dispersion ellipse, whose major axis may be taken as the average linear dependence of log A on φ_0 for a given range of cathodes. Experiments carried out with other hexaborides produced similar results. A table shows the limiting values of φ_0 and A for hexaborides of different rare earth metals in the same working conditions as given in Fig. 1. The data obtained thus show definitely the influence of

Card 2/[illegible]

Thermionic emission properties ...

residual gases on the hexaboride performance. All calculations confirm the fact that chemically active metals (zirconium, hafnium, tungsten) and even platinum, together with many compositions of the injection type structure with active metal components (thorium, uranium, rare earth elements) are sensitive to oxygen and possibly to other components of residual gases. The changes in the work function, accompanied by changes in constant A satisfying the linear dependence of lg A on φ_0, may also be observed with current densities remaining constant - at given cathode temperatures. In this case the emission will fall with increasing φ_0 at lower values of T, and for higher values of T it will increase with increasing φ_0. Because of this fact only investigations within the wide range of cathode temperatures would show the effect of residual gases and of other factors on emission properties. Besides the influence of residual gases, emission properties may also be affected by impurities of the tetra-tri-or di-boride type. Another table shows the values of the real work function (φ_T at A = 120 Am/

Card 3/64

Thermionic emission properties ...

cm^2 $degree^2$) of hexaborides and oxides of each metal. It is stated in conclusion that reliable determination of thermionic emission properties of hexaborides and of other compositions of injection-type structure may be obtained only under the following conditions: 1) The investigations are carried out in high vacuum (not less than 10^{-8} mm Hg); 2) The cathodes are prepared from pure single-phase substance, with X-ray analysis control before and after the study of emission properties of the cathode; 3) There is no possibility of reaction between the material of the cathode and the base. There are 2 figures, 4 tables and 18 references: 9 Soviet-bloc and 9 non-Soviet-bloc. The 4 most recent references to the English-language publication read as follows: G.A. Haas, J.T. Jensen, J. Appl. Phys., 1960, 31, 7, 1231; E.A. Kmetko, Phys. Rev., 1959, 116, 4, 895; R.W. Pidd, G.M. Grover, D.J. Roehling, E.W. Salmi, J.D. Farr, N.H. Krikorian, W.G. Wittmann, J. Appl. Phys., 1959, 30, 10, 1575; V.L. Stout, Proc. 4th Nat. Conf. on Tube Techn., N.Y., University Press, 1959, 178 - 179.

SUBMITTED: March 29, 1961

Card 4/5 4/

TSAREV, B.P., inzh.; STASENKO, I.K., inzh.; SHALANIN, P.D., inzh.; SOKOLOV, P.P., inzh.; TITOV, R.P., inzh.; YAKOBSON, P.V., kand.tekhn.nauk; TITOV, S.N., kand.tekhn.nauk

Determining consolidated material consumption norms for locomotive and car repairs. Vest. TSNII MPS 20 no.6:62-64 '61. (MIRA 14:10)

(Railroads--Repair shops)

S/849/62/000/000/011/016
A006/A101

9.3120

AUTHORS: Kudintseva, O. A., Neshpor, V. S., Samsonov, G. V., Tsarev, B. M., Paderno, Yu. B.

TITLE: Thermo-emission properties of scandium and gadolinium borides

SOURCE: Vysokotemperaturnyye metallokeramicheskiye materialy, Inst. metalloker. i spets. spl. AN Ukr.SSR, Kiev, Izd-vo AN Ukr. SSR. 1962, 109 - 112

TEXT: The authors investigated the electronic emission of scandium and gadolinium borides produced by Samsonov's vacuum thermal method. The thermo--electronic emission of the borides was studied in experimental diodes with cylindrical anodes and tantalum cathodes. Values of current efficiency and of constant A in the emission equation $I = AT^2 \exp - \frac{e\varphi}{kT}$ were obtained by measuring the emission. These data are tabulated. It was found that the regularities established by Samsonov for some physical properties in the diboride series of scandium-titanium-vanadium-chromium are also applicable to the work function of electrons (2.9; 3.88; 3.95; 3.36 respectively). Samsonov has stated that the

Card 1/2

Thermo-emission properties of scandium and...

properties of scandium borides are mainly predetermined by the state of 4s-electrons. The dominant part of 4s-electrons in this case is confirmed. Low values of work function of gadolinium boride electrons in the boride series of rare--earth metals can be explained by the presence of one substantially free 5d-electron and a stable half-filled 4f-shell. There are 1 table and 1 figure.

S/226/62/000/006/013/016
E073/E435

AUTHORS: Tsarev, B.M., Illarionov, S.V.

TITLE: Optical constants of LaB_6 and CeB_6

PERIODICAL: Poroshkovaya metallurgiya, no.6 , 1962, 85-88

TEXT: Optical properties of LaB_6 and CeB_6 were studied in the range of 1 to 25 μ to determine directly the energy structure, applying the method of I. Simon (Journ. Opt. Soc. Amer., v.41, 1951, 336). Reflectivity values for incidence angles of 20 and 70°C, obtained from ground, polished surfaces, showed that the reflectivity index n, depended primarily on the material and not on the surface quality. The measured values of n, the absorption index κ and the absorption coefficient A as a function of the wavelength show that LaB_6 exhibits semiconducting properties, which is evidenced by the strong dependence of the reflectivity on the incidence angle, with a minimum at $\lambda = 15.5\ \mu$. This is attributed to the existence in LaB_6 of a forbidden zone of finite width of 0.08 eV. CeB_6 has a high reflectivity which does not depend greatly on its incidence angle. Theory requires 20 electrons to form a complete system of wave functions of the

Card 1/3

octahedron B_6, of which boron donates only 18. Lanthanum in the hexaboride behaves as a trivalent metal and contributes three electrons to the electron orbit. Two of these are used for constructing the electron orbits of the boron; the remaining electron for each atom can form the "free electrons gas". However, due to the presence of a positive (3e) ion of the metal, this electron remains linked with the atomic residue of the metal and requires a certain finite energy ($\sim$ 0.08 eV) to be brought into the free state. In the case of CeB_6, quadrivalent compounds which are weakly linked with the nucleus may form. On forming a hexaboride, two of these will form stable electron orbits, whilst the remaining two will interact strongly with the quadruple-charge ions and the combination of these interactions may cause one of the electrons to be strongly linked with the nucleus, whilst the other will fall into a state corresponding to the free carrier, owing to the electron-electron interaction. Thus, the obtained data confirm the theoretical concepts of the hexaborides electron structure and give numerical values of the required parameters. There are 4 figures.

S/226/62/000/006/013/016
E073/E435

Optical constants ...

ASSOCIATION: Moskovskiy fiziko-tekhnicheskiy institut
(Moscow Physicotechnical Institute)

SUBMITTED: April 14, 1962

Card 3/3

h1016

S/058/62/000/009/055/069
A057/A101

26.1640

AUTHORS: Bondarenko, B. V., Tsarev, B. M.

TITLE: On the nature of temperature dependence of the work function of semiconductor thermocathodes

PERIODICAL: Referativnyy zhurnal, Fizika, no. 9, 1962, 3, abstract 9-3-61 ("Tr. Mosk. fiz.-tekhn. in-ta", 1962, v. 8, 14 - 20)

TEXT: Investigating thermoelectronic properties of semiconductor cathodes in a wide temperature range, usually a break of Richardson's straight lines (RS) is observed. The breaks of straight lines for thermocathodes of the semiconductor type have the same character; at low temperatures the RS are much steeper than at high temperatures. It is demonstrated that the behavior of experimental RS for semiconductor thermocathodes can be explained uniquely by the variation of the electrochemical potential in a wide temperature range. A consideration of the variation of the electrochemical potential in different temperature ranges makes it possible not only to explain the physical meaning of the values obtained from the inclination of the RS, but also to calculate from the experi-

Card 1/2

On the nature of temperature dependence of...

mental data the value of the external work function, the energy of ionization of the admixture and its concentration for the semiconductor. There are 6 references.

A. F.

[Abstracter's note: Complete translation]

Card 2/2

TSAREV, B.M., inzh.

Rotary trench diggers. Mekh. stroi. 19 no.6:25-28 Je '62.
(MIRA 17:2)

ALEKSEYEV, G.P.; ANDON'YEV, V.S.; ARNGOL'D, A.V.; BASKIN, S.M.; BASHMAKOV, N.A.; BEREZIN, V.D.; BERMAN, V.A.; BIYANOV, T.F.; GORBACHEV, V.N.; GRECHKO, I.A.; GRINBUKH, G.S.; GROMOV, M.F.; GUSEV, A.I.; DEMENT'YEV, N.S.; DMITRIYEV, V.P.; DUL'KIN, V.Ya.; ZVANSKIY, M.I.; ZENKEVICH, D.K.; IVANOV, B.V.; INYAKIN, A.Ya.; ISAYENKO, P.I.; KIPRIYANOV, I.A.; KITASHOV, I.S.; KOZHEVNIKOV, N.N.; KORMYAGIN, B.V.; KROKHIN, S.A.; KUDOYAROV, L.I.; KUDRYAVTSEV, G.N.; LARIN, S.G.; LEBEDEV , V.P.; LEVCHENKOV, P.N.; LEMZIKOV, A.K.; LIPGART, B.K.; LOPAREV, A.T.; MALYGIN, G.F.; MILOVIDOVA, S.A.; MIRONOV, P.I.; MIKHAYLOV, B.V., kand. tekhn. nauk; MUSTAFIN, Kh.Sh., kand. tekhn. nauk; NAZIMOV, A.D.; NEFEDOV, D.Ye.; NIKIFOROV, I.V.; NIKULIN, I.A.; OKOROCHKOV, V.P.; PAVLENKO, I.M.; PODROBINNIK, G.M.; POLYAKOV, G.Ya.; PUTILIN, V.S.; RUDNIK, A.G.; RUMYANTSEV, Yu.S.; SAZONOV, N.N.; SAZONOV, N.F.; SAULIDI, I.P.; SDOBNIKOV, D.V.; SEMENOV, N.A.; SKRIPCHINSKIY, I.I.; SOKOLOV, N.F.; STEPANOV, P.P.; TARAKANOV, V.S.; TREGUBOV, A.I.; TRIGER, N.L.; TROITSKIY, A.D.; FOKIN, F.F.; TSAREV, B.F.; TSETSULIN, N.A.; CHUBOV, V.Ye., kand. tekhn. nauk; ENGEL', F.F.; YUROVSKIY, Ya.G.; YAKUBOVSKIY, B.Ya., prof.; YASTREBOV, M.P.; KAMZIN, I.V., prof., glav. red.; MALYSHEV, N.A., zam. glav. red.; MEL'NIKOV, A.M., zam. glav. red.; RAZIN, N.V., zam. glav. red. i red. toma; VARPAKHOVICH, A.F., red.; PETROV, G.D., red.; SARKISOV, M.A., prof., red.; SARUKHANOV, G.L., red.; SEVAST'YANOV, V.I., red.; SMIRNOV, K.I., red.; GOTMAN, T.P., red.; BUL'DYAYEV, N.A., tekhn. red.

(Continued on next card)

ALEKSEYEV, G.P.---(continued). Card 2.

[Volga Hydroelectric Power Station; a technical report on the design and construction of the Volga Hydroelectric Power Station (Lenin), 1950-1958] Volzhskaia gidroelektrostantsiia; tekhnicheskii otchet o proektirovanii i stroitel'stve Volzhskoi GES imeni V.I.Lenina, 1950-1958 gg. V dvukh tomakh. Moskva, Gosenergoizdat. Vol.2.[Organization and execution of construtions and assembly work] Organizatsiia i proizvodstvo stroitel'no-montazhnykh rabot. Red. toma: N.V.Razin, A.V.Arngol'd, N.L. Triger. 1962. 591 p. (MIRA 16:2)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Razin).
(Volga Hydroelectric Power Station (Lenin)--Design and construction)

24.3950,
7.5310

S/181/62/004/009/035/045
B104/B186

AUTHORS: Tsarev, B. M., and Illarionov, S. V.

TITLE: The optical constants of LaB_6 and CeB_6

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2603 - 2606

TEXT: The optical constants of LaB_6 and CeB_6 are determined on polycrystalline disks by studying reflection, diffraction and absorption in the range of wavelengths between 1 and 22μ with an NKC-11 (IKS-11) spectroscope. The specimens were produced by hot pressing of metal powder. At 15.5μ the reflectivity of LaB_6 has a minimum, the absorptive power has a maximum. The reflectivity exhibits an angular dependence. These properties are indicative of an 0.08 ev wide forbidden band. CeB_6 has strong reflectivity depending only slightly on the angle of incidence; it has typically metallic properties. The characteristics of the absorption spectrum, which are not very distinct at 15.5μ, are not apt to prove the existence of a forbidden band. They are related to the transition into the free state of electrons bound to metal atoms. There are 2 figures.

~~Card 1/2~~ Moscow Phys Tech Inst.

S/109/62/007/012/021/021
D271/D308

2.3120
26.1640

AUTHOR: Yermakov, S. V. and Tsarev, B. M.

TITLE: Thermionic emission of silicides of metals belonging to transitional groups of the periodic system of elements

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 12, 1962, 2102-2104

TEXT: Measurements of thermionic emission of disilicides of 8 metals are reported and discussed. Silicides were placed on a W-tape, occupying a predetermined section, and a thermocouple was welded to the other side of the tape. The value of effective work function was determined from measurements of temperature and current density. The following values of $\varphi_E = \varphi_o + \frac{d\varphi}{dT}T$ in eV are tabulated: $ReSi_2$: $4.02 - 2.67.10^{-4}$ T (1200 - 1900°K), WSi_2: $4.04 - 4.67.10^{-4}$ T (1200 - 1800°K), $TaSi_2$: $4.42 - 3.8.10^{-4}$ T (1400 - 1900°K), $MoSi_2$: 4.02 -

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Thermionic emission of ...

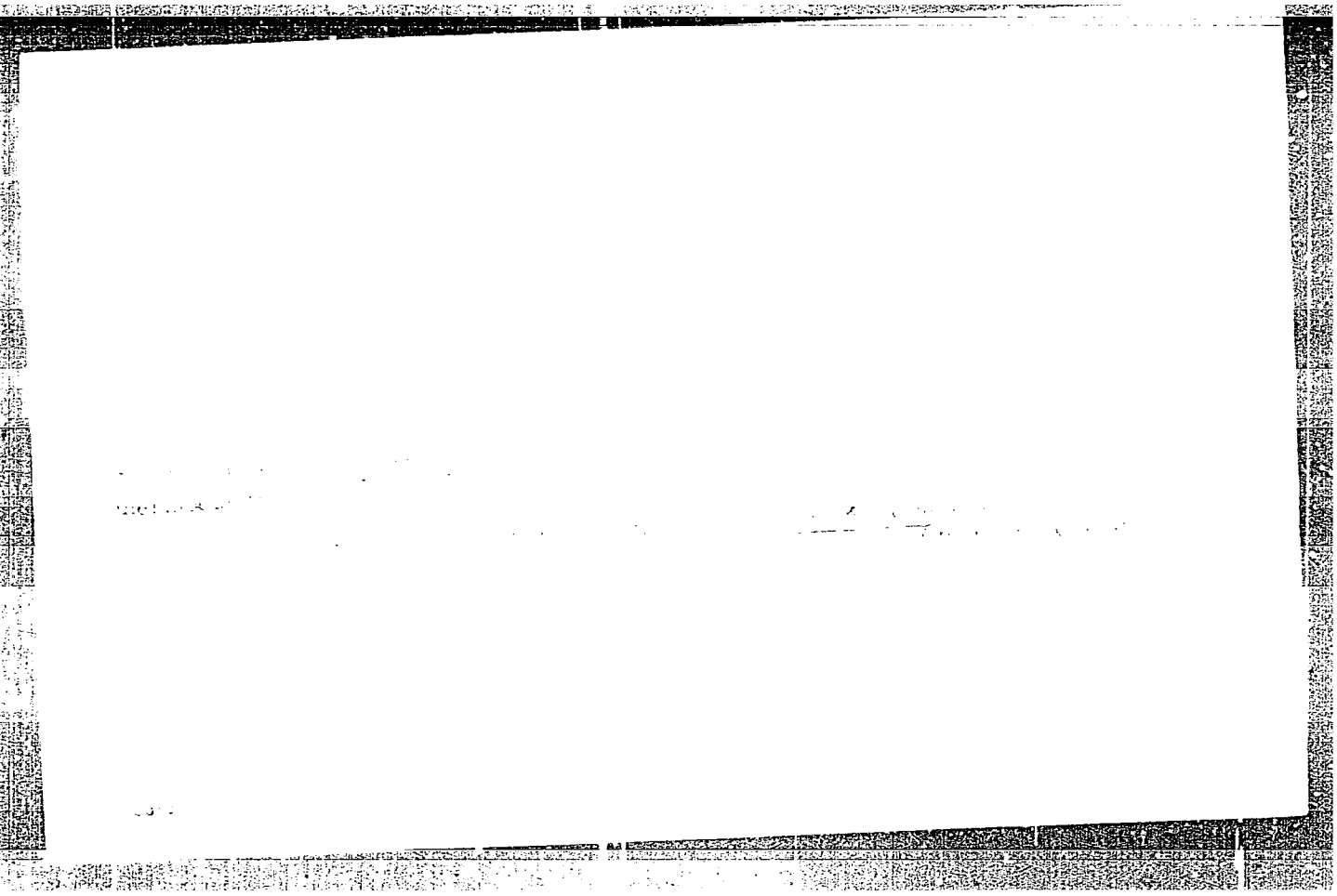
$5.10.10^{-4}$ T (1100 - 1800°K), $NbSi_2$: 4.34 - $5.25.10^{-4}$ T (1300 - 1700°K), $ZeSi_2$: 3.95 - $5.10.10^{-4}$ T (1200 - 1900°K), VSi_2: 3.26 - $7.5.10^{-5}$ T (1100 - 1600°K), CrSi : 3.49 - $5.8.10^{-5}$ (1200 - 1400°K), Cr_3Si: 2.35 + $6.33.10^{-4}$ T (1100 - 1400°K), $CrSi_2$: 3.78 - $1.2.10^{-4}$ T (1200 - 1450°K). Values of the work function at 300 and 1400°K are also given. Some silicides have displayed a fairly strong activation at the beginning of temperature process, but the work function noticeably rises above a certain temperature, up to the limit of the temperature range. Nb silicides have shown activation in the entire range studied. V, Ta, Cr silicides remained in the state of stabilized activity. Formation of SiO_2 film which evaporates at higher temperatures is suggested as an explanation of the observed variations of activity. There are 2 figures.

Card 2/2

[illegible], Georgiy Yakovlevich; [illegible]

[illegible], V. I., red.

[Technical and chemical processes in the manufacture of electrical vacuum devices] Tekhnologicheskie protsessy elektrovakuumnogo proizvodstva. Moskva, [illegible] Energiia, 1964. 303 p.



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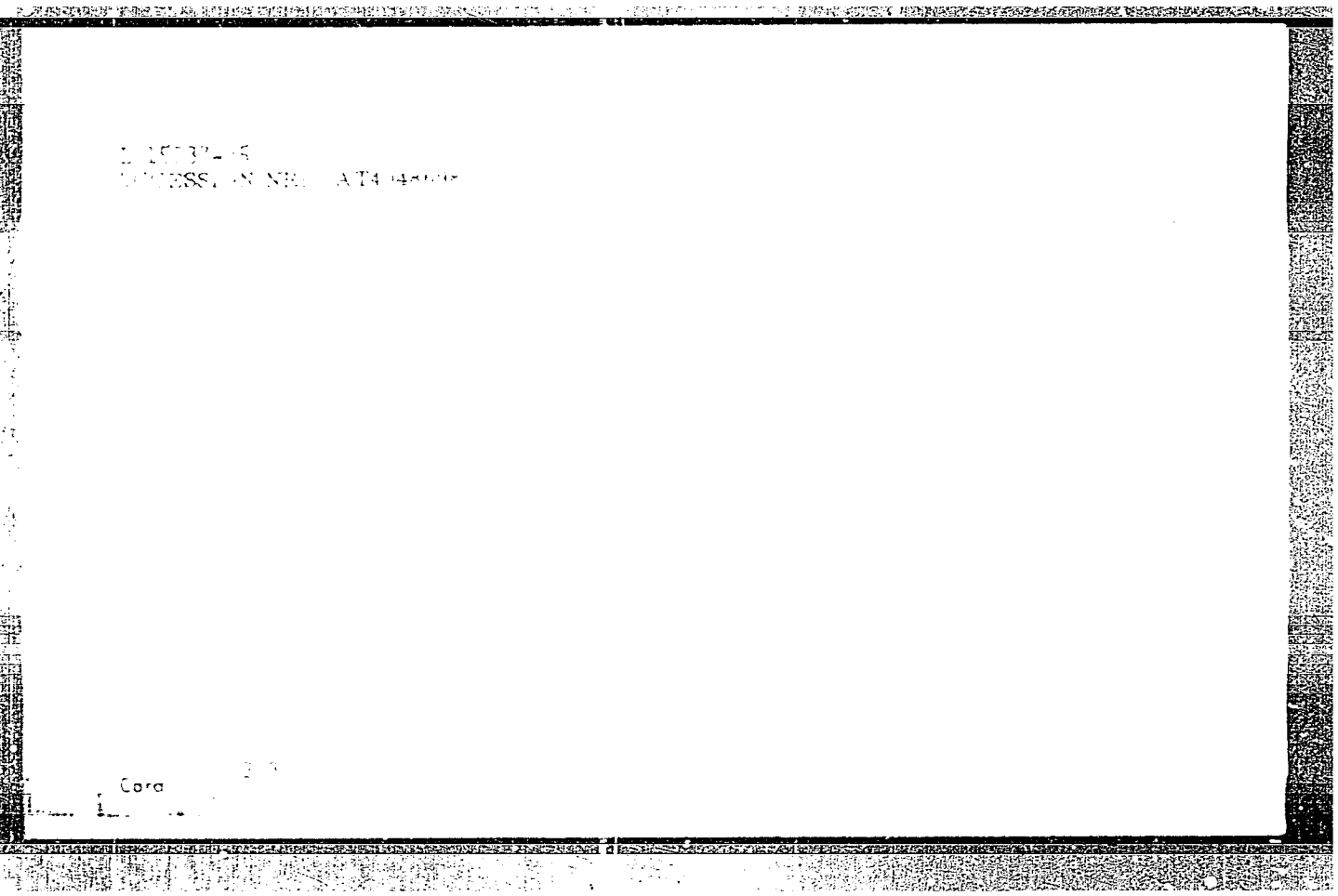


L 15037-65
ACCESSION NR: AT4048698

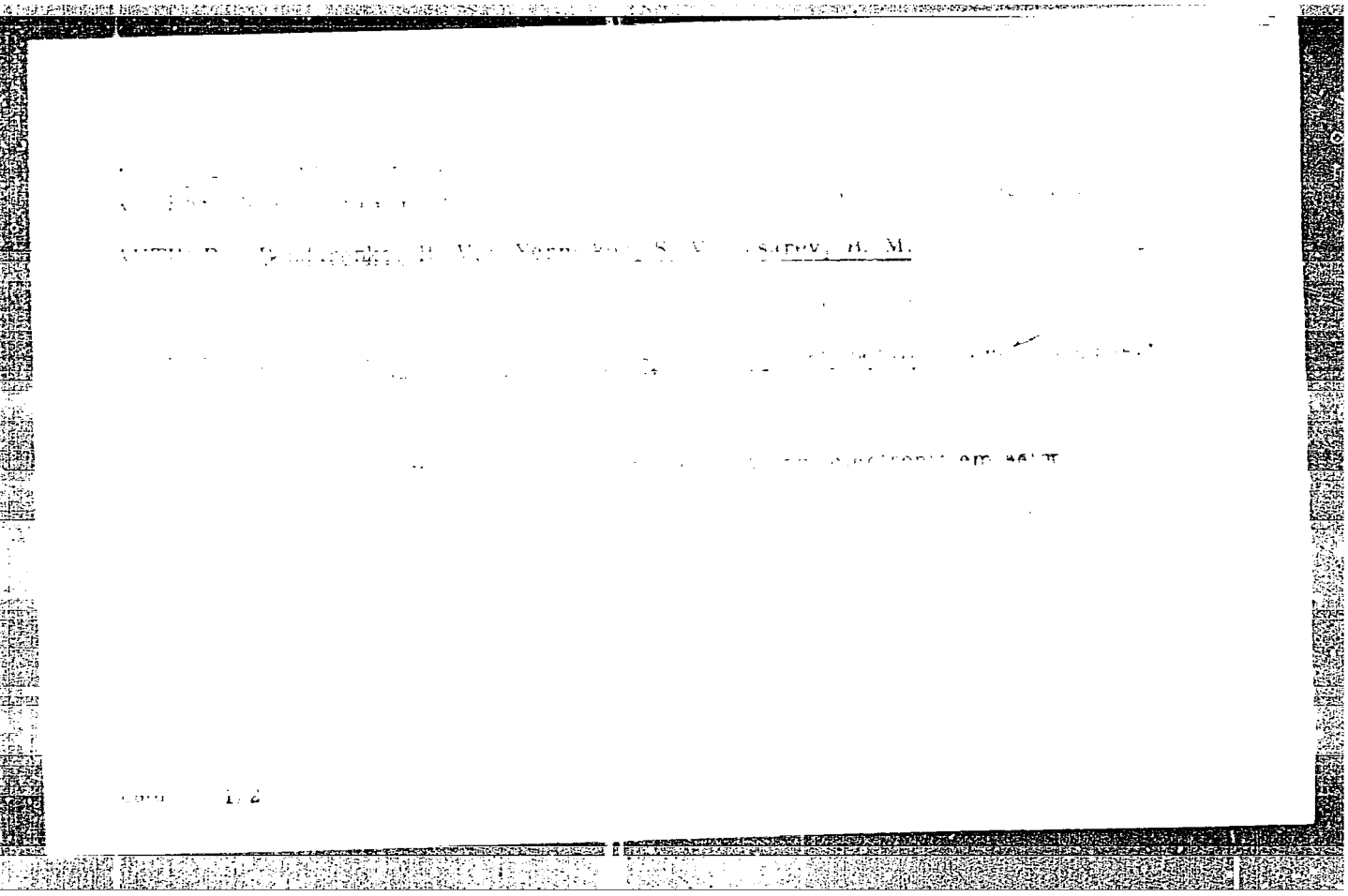
and even more complex hexaborides of rare earth metals with high specific electrical

ASSOCIATION: None

SUBMITTED: 13Jun64 ENCL: 00 SUB CODE: MM,GP

NO REF SOV: 012 OTHER: 004

Card 3/3



Card 2/2

ACCESSION NR: AP4017607 S/0109/64/009/002/0355/0356

AUTHOR: Zhadan, A. I.; Tsarev, B. M.

TITLE: Pressed iridium-base tungstate cathode

SOURCE: Radiotekhnika i elektronika, v. 9, no. 2, 1964, 355-356

TOPIC TAGS: electron tube, electron tube cathode, tungstate cathode, iridium base cathode, iridium base tungstate cathode

ABSTRACT: Conventional tungsten-base tungstate cathodes have a widely varying emission and are self-poisoned rapidly due to an oxide film that covers the tungsten grains. A new cathode was prepared by pressing a cathode pellet, at 20 t/cm^2, into a moly cylinder base. The pellet consisted of 89.7% iridium, 9.5% barium-calcium tungstate, and 0.8% aluminum. It was found that the new cathodes: (1) Permit easier and quicker degassing and activation, thanks to the higher temperature of processing permissible; (2) Have a much higher current

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ACCESSION NR: AP4017607

density and more stable emission than the W-base cathodes (details for various temperatures tabulated); (3) Have a good reproducibility of characteristics, at temperatures up to 1,350C, of both the emission current and the diode parameters (initial current and space-charge-limited current). It is also noted that the Ir-base cathode has an effective work function of 1.82 ev at 1,000K as against 2.09 ev for the ordinary W-base cathode. Orig. art. has: 1 table.

ASSOCIATION: none

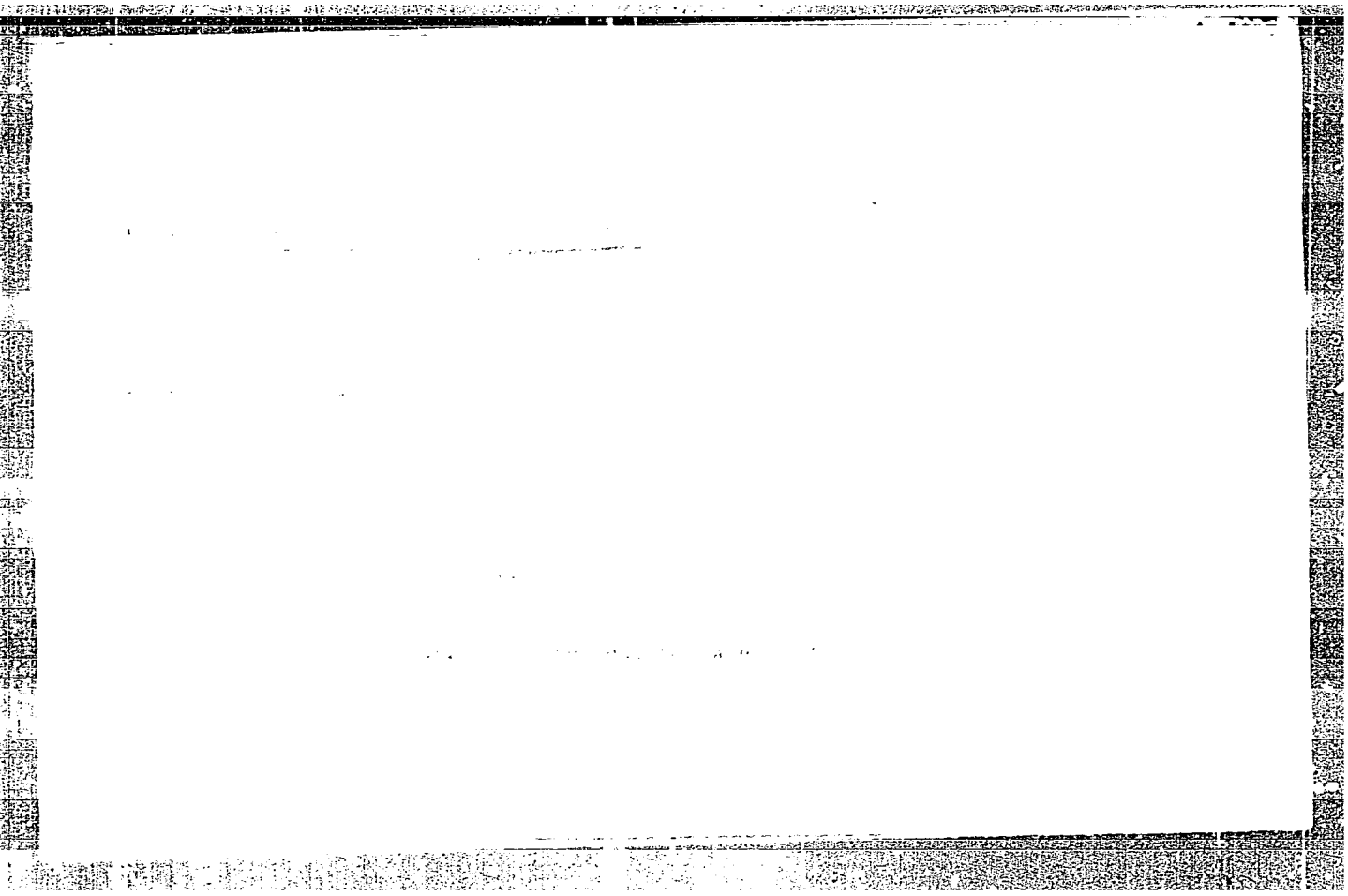
SUBMITTED: 20Sep63 DATE ACQ: 18Mar64 ENCL: 00

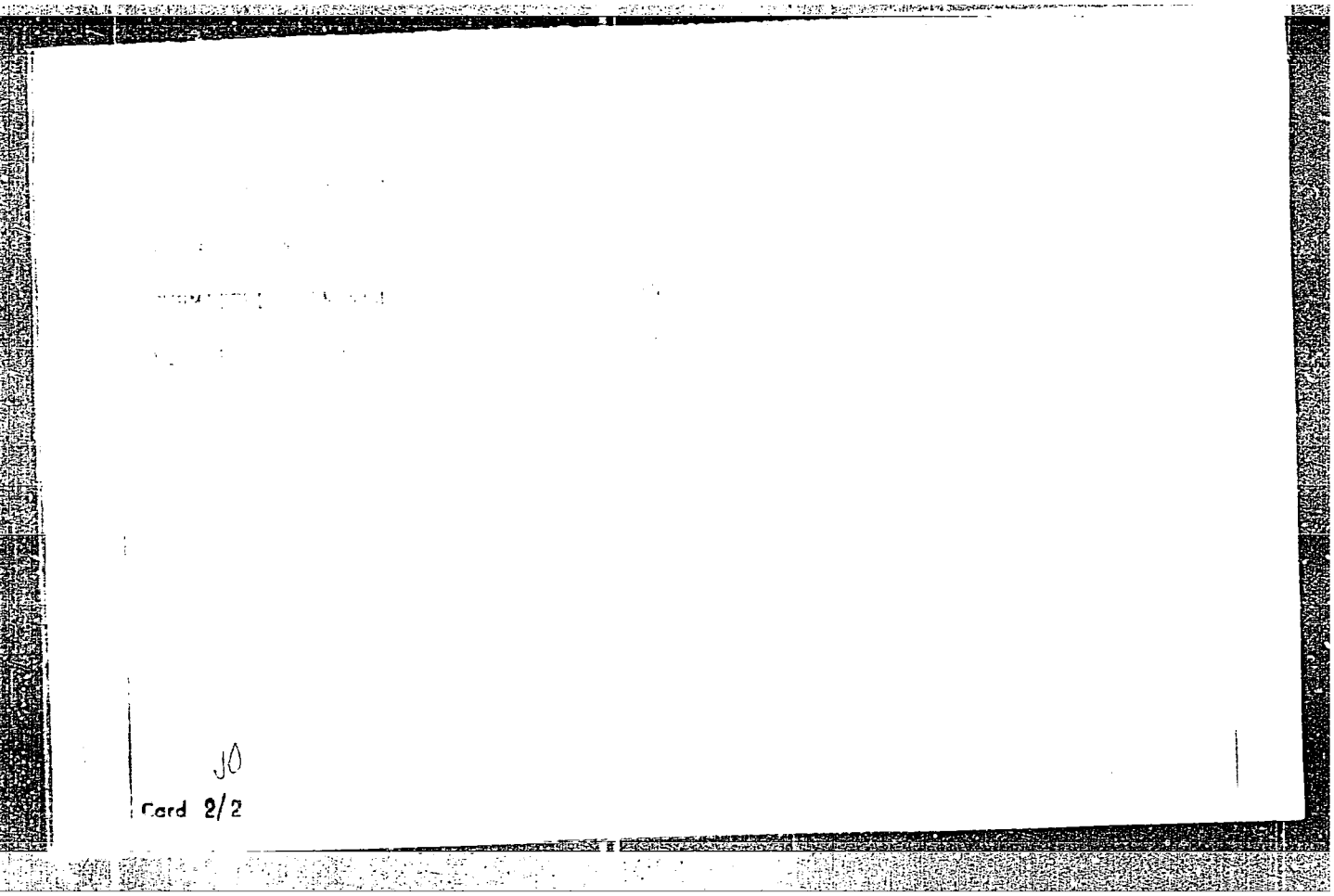
SUB CODE: GE NO REF SOV: 002 OTHER: 000

Card 2/2

TSAREV, B.M.

Letter to the editor. Porosh. met. 5 no.5:103-104 My '65. (MIRA 18:5)





L 21001-66 EWT(1)/EWT(m)/ETC(f)/EPF(n)-2/EWG(m)/T/EWP(t) IJP(c) JD/JW/JG/AT
ACCESSION NR: AP5022419 UR/0109/65/010/009/1555/1573
539.293:537.583

AUTHOR: Tsarev, B. M.

TITLE: New trends in the development of thermionic emitters (a review)

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1555-1573

TOPIC TAGS: thermionic emitter

ABSTRACT: Based on 1956 - 65 Soviet publications and 1939 - 64 Western materials, this review includes the following: New applications of emitters (energy converters, ion sources for mass spectrometers, electrostatic rocket motors); New materials for emitters (ittrium oxide, lantanum hexaboride, actinoides, plutonium carbide); Alkali-metal thermionic emitters (Cs films on high-melt metals, metal-fluorine-Cs, metal-H-Cs, multi-alkali emitters); Homogeneous emitters and their materialization (single-crystal-face cathodes, polycrystalline emitters); Investigation of physical and chemical properties of

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L 21001-66
ACCESSION NR: AP5022419

films on high-melt metals (adsorption, migration, and desorption of film components); Composite shf cathodes (pressed, impregnated, metal-capillary, tungsten-barium-silicide); Thermionic properties of pure metals (work function of Ag, Al, Au, Ba, Cd, Cs, Mo, Nb, Ta, Th, U, W at 300K); Thermionic emission of high-melt alloys (Mo-W, Nb-Ta, Ta-Re); Oxide-coated cathodes (mechanism of activation, nature of donors); Theory of thermionic emission. Orig. art. has: 1 formula and 2 tables.

ASSOCIATION: none

SUBMITTED: 22Feb65 ENCL: 00 SUB CODE: EC

NO REF SOV: 080 OTHER: 065

Card 2/2 BK

ACC NR: AP6015458 (N) SOURCE CODE: UR/0181/66/008/005/1417/1427

AUTHOR: Makukha, V. I.; Tsarev, B. M.

ORG: Moscow Physico-Technical Institute (Moskovskiy fiziko-tekhnicheskiy institut)

TITLE: Adsorption and electron emission of films of alkali earth metals on tungsten, iridium, and rhodium

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1417-1427

TOPIC TAGS: field emission microscope, alkali earth metal, electron emission, single crystal, high temperature metal

ABSTRACT: Films of Ba, Sr, and Ca and their mixtures, deposited on single crystals of W, Ir, and Rh were studied in a field emission microscope at a vacuum of $1 \cdot 10^{-9}$-$1 \cdot 10^{-10}$ torr. Preferential adsorption is observed in areas between main crystallographic directions of the W single crystal and on the (111) and (112) faces. At optimum concentrations, preferential places for Ba are high-emission areas of pure W, with the exception of the (111) faces; for Sr--the (111) faces; for Ca--only the (111) and (112) faces. With an Ir base, preferential, uniform coating of high-index faces with Ba and Ca was observed at concentrations close to the optimum. In this case, Ba is easily adsorbed also on the (100) face and Ca--on the (113) face. The strongest adsorption bonds of Ba are on the (102) and (112) faces; those of Ca--on the

ACC NR: AP6015458

(113) and (112) faces; in case of mixed layers of Ca and Ba, also on the most densely packed (111) faces of Ir. Orig. art. has: 3 figures, 1 table.

SUB CODE: 20,11/ SUBM DATE: 20Sep65/ ORIG REF: 017/ OTH REF: 010

Card 2/2

L 42304-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6015468 (N) SOURCE CODE: UR/0181/66/008/005/1493/1497

AUTHOR: Ovchinnikov, A. P.; Tsarev, B. M.

ORG: Moscow Physics Engineering Institute (Moskovskiy Fiziko-tekhnicheskiy institut)

TITLE: Adsorption of cesium on the faces of tungsten single crystals

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1493-1497

TOPIC TAGS: adsorption coefficient, tungsten single crystal, cesium, field emission microscope, TUNGSTEN, FIELD EMISSION, CRYSTAL PROPERTY

ABSTRACT: The authors describe an investigation of the adsorption of cesium on individual faces of a tungsten single crystal. The study was performed by means of a field-emission microscope with oscillating spikes, which made it possible to determine the emission yield for the single crystal spike as a whole as well as for the individual faces of the crystal. The design of the microscope was described by I. L. Sokol'skaya and G. N. Fursey (Radiotekhn. i elektron., 7, 1474, 1962). Some of the conclusions reached are presented. The value of the minimum emission yield achieved for different faces differ little from each other or from the value for the spike as a whole (average value, 1.5 ev). The time interval for reaching the minimum emission yield for various faces is different: the fastest time is achieved by faces

Card 1/2

ACC NR: AP6015468

{112}, and the slowest by the faces {111} and {100}. With an increase in the degree of covering above the optimal, the emission yield increases and levels out, where its value for the faces {111} and {112} differs little from the value of the spike as a whole (average value, 1.8 ev). Here, the emission yield of the faces {110} and {100} raises the value of the spike emission yield as a whole by 0.2 — 0.3 ev. The value of the desorption energies from the faces {110} and {111} with $\theta = 1$ differ little from the energy mean value for the spike as a whole (average value, 1.75 ev). For the faces {112} it is approximately 0.2 ev higher, and for the faces {100} 0.2 ev lower than the values of the average desorption energy from the spike as a whole. The authors express their gratitude to V. I. Makukhe and G. N. Fursey for valuable advice in the design of the oscillator. Orig. art. has: 5 figures and 1 table.

SUB CODE: 20/ SUBM DATE: 12Oct65/ ORIG REF: 005/ OTH REF: 002

L 06976-67 EWT(1)/EWP(e)/EWT(m)/EWP(w)/EWP(t)/ETI/EWP(k) IJP(c) JD/JG/AT
ACC NR: AP6018361 SOURCE CODE: UR/0089/66/020/005/0439/0440

AUTHOR: Yermakov, S. V.; Tsarev, B. M.

ORG: none

TITLE: Thermionic emission of uranium dodecaboride

SOURCE: Atomnaya energiya, v. 20, no. 5, 1965, 439-440

TOPIC TAGS: uranium compound, tungsten, thermionic emission, work function

ABSTRACT: The thermionic emission of uranium dodecaboride was measured by a procedure described earlier (Radiotekhnika i elektronika v. 7, 2099, 1962). The substrate was a tungsten ribbon, on which a thin layer (30 -- 50) of a dense suspension of UB_{12} powder in metal alcohol was deposited. As in the case of hexaboride of rare earth metals, UB_{12} reacts with the tungsten, causing the latter to curl, and causing metallic uranium to be deposited on the walls of the bulb. The work function was determined from the measured values of the temperature and current density and is found to satisfy the equation $2.89 + 2.3 \times 10^{-4} T$. Deviations from a linear dependence, towards lower values of the work function, are observed at 1500 -- 1900 K and are probably due to the start of noticeable reaction between UB_{12} and

Card 1/2 UDC: 621.032.273:546.791 + 546.271

L 06976-67

ACC NR: AP6018361

the tungsten. The region above 1900 K could not be investigated because the limit of the anode current was reached. Attempts to cover the UB_{12} film with iridium powder were also unsuccessful. Comparison with the data on UB_4 and UB_2 indicate that the deviation from linearity at high temperatures can be attributed to gradual transformation of UB_{12} into UB_4 and then UB_2. The authors thank Yu. B. Paderno and G. V. Samson for supplying the sample of uranium dodecaboride. Orig. art. has: 2 tables and 1 formula.

SUB CODE: 18 SUBM DATE: 01Oct65/ ORIG REF: 003 OTH REF: 001

Card 2/2

ACC NR: AP6036954 (A,N) SOURCE CODE: UR/0181/66/008/011/3181/3186

AUTHOR: Tishin, Ye. A.; Tsarev, B. M.

ORG: Moscow Physicotechnical Institute (Moskovskiy fiziko-tekhnicheskiy institut)

TITLE: On the existence of a minimum in the work function of film cathodes

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3181-3186

TOPIC TAGS: work function, metal film, cathode

ABSTRACT: Studies of the dependence of the work function ϕ on the degree of coverage θ were carried out on barium and calcium films vaporized onto tungsten, tantalum, niobium and rhenium, and on cesium films vaporized onto tungsten and rhenium. For all systems, in the 10^{-9}-10^{-10} mm pressure range of the residual gases, $\phi(\theta)$ functions with a minimum were obtained. It was found that impurities in amounts equivalent to tenths and hundredths of a monolayer do not have any appreciable effect on the form of $\phi(\theta)$; this suggests that the minimum in the work function of the cathodes will exist even under conditions of limiting purity. No minimum in $\phi(\theta)$ was observed in two cases: (1) when the films were vaporized onto powders and (2) when the sample (a tungsten ribbon) was heated briefly close to the melting point. It is concluded that a minimum in the work function is characteristic of monatomic films on smooth surfaces, and that the roughness of the surface leads to a monotonic $\phi(\theta)$ relationship. In conclusion, the authors express their deep appreciation to V. I. Makukh for his

ACC NR: AP6036954

consultation and assistance in problems of producing an ultrahigh vacuum, and to G. M. Kukavadze, who directly supervised the mass-spectrometric studies. Orig. art. has: 7 figures.

SUB CODE: 20/09/ SUBM DATE: 23Feb66/ ORIG REF: 007

Card 2/2

L 3506-66 EWT(m)/EWA(d)/EWP(t)/EWF(z)/EWP(b) MJW/JD
ACCESSION NR: AP5020115

UR/0095/65/000/008/0025/0028
621.643:621.004.5

AUTHOR: Tsarev, B. M. 44,55

TITLE: Use and technical maintenance of construction machinery in northeast construction sites

26
B

SOURCE: Stroitel'stvo truboprovodov, no. 8, 1965, 25-28

TOPIC TAGS: construction machinery, machinery maintenance, construction machinery reliability

ABSTRACT: The difficulties encountered in the use of construction machinery in northeast construction sites (gas and crude oil lines, etc) where winter temperatures are in the range of -55 to -64C (5-6 months of the year) are qualitatively discussed. It was found that parts of caterpillar tractors made of steel 45 and 45Kh are subject to brittle fracture. To prevent failures of the caterpillar drive shafts which are cantilevered, welded or wooden supports have been found useful. Tires on trucks and automobiles must be prevented from freezing to the ground by using wooden inserts during prolonged stops; during the first 10-20 minutes after a prolonged stop the vehicle must be operated slowly, and bumps should be avoided. The insulation and heating of operator compartments has been

Card 1/2

L 3506-66
ACCESSION NR: AP5020115

entirely inadequate, requiring do-it-yourself improvements. Single windshields are useless, and operators have had to install second windshields with warm air from the engine blown into the space between windshields to provide visibility. The use of diesel engines has been plagued primarily by cooling system problems, particularly during starting (fires often have to be built under the engines to get them operating) and during idling when the engines become overcooled and operate inefficiently. Batteries have been another common source of trouble, with freezing of the electrolyte and cracking of the battery case quite common. It was found that heated garage facilities for machinery storage and regular maintenance improve the effectiveness of machinery in these cold regions. An appeal is made to improve the design of such machinery. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: GO

NO REF SOV: 000 OTHER: 000

Card 2/2

TSAREV, B. P.

TSAREV, B. P.

UCHET, KAL'KULYATSIYA I OTCHETNOST'V KHOZYAYSTVENNYKH YEDINITSAKH ZHELEZNYKH DOROG (ACCOUNTING, CALCULATION AND RECORDING IN ECONOMIC UNITS OF RAILROADS BY I. F. KAIMYCHIN (1) B. P. TSAREV. MOSKVA, TRANSZHELDORIZDAT, 1956

103 P. TABLES.

BIBLIOGRAPHY: P. 102

TSAREV, B.P., aspirant.

Results of changes made by the railroads in income computation and improvements in planning the sources of their own working capital. Trudy MTMI no.7:207-215 '57. (MIRA 11:5)
(Railroads--Finance)

TSAREV, B.P., otv. za vypusk; USENKO, L.A., tekhn. red.

[Analysis of the production and managerial operations of car depots; methodological handbook] Analiz proizvodstvenno-khoziaistvennoi deiatel'nosti vagonnykh depo; metodicheskoe posobie. Moskva, Vses.izdatel'sko-poligr.ob"edinenie M-va putei soobshcheniia, 1961. 36 p. (MIRA 15:1)

1. Russia (1923- U.S.S.R.) Ministerstvo putey soobshcheniya. 2. TSentral'noye planovo-ekonomicheskoye upravleniye Ministerstva putey soobshcheniya SSSR (for TSarev).
(Railroads--Repair shops)

TSAREV, Boris Petrovich; SHCHERBAKOV, P.D., retsenzent; KRISHTAL', L.I., red.; VOROTNIKOVA, L.F., tekhn. red.

[Working capital of railways]Oborotnye sredstva zheleznykh dorog. Moskva, Transzheldorizdat, 1962. 37 p. (MIRA 15:9)
(Railroads--Finance)

TSAREV, B.P., inzh.

Reduction of the working capital in connection with the transfer to new types of traction. Vest.TSNII MPS 21 no.3:48-50 '62. (MIRA 15:5)

(Railroads—Cost of operation)

TSAREV, B.P., inzh.

Establishing of norms of the working capital based on the stock of materials and spare parts in car depots. Vest.TSNII MPS 22 no.1:56-59 '63. (MIRA 16:4)

(Railroads—Management)

KLESHCH, N.Ya., inzh.; TSAREV, B.P., inzh.

Establishing the norms of working capitals on railroads. Zhel.-dor.transp. 45 no.12:60-64 D '63. (MIRA 17:2)

1. KERZON, Ya. S., Eng.; PEYCH, M. M.; TSAREV, B. S.

2. USSR (600)

4. Kilns

7. Improving wood-drying kilns of antiquated construction. Der. i lesokhim. prom. 2, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

KRECHETOV, I.V., nauchnyy sotrudnik; PEYCH, N.N., nauchnyy sotrudnik; TSAREV, B.S., nauchnyy sotrudnik.

Improving lumber drying chambers. Rats. i izobr. predl. v stroi. no.71:25-28 '53. (MLRA 9:6)

1.TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying)

KHRCHETOV, I.; TSAREV, B.

Ways for improved drying of lumber. Prom.koop. no.4:38-46 Ap'55.
(MLRA 8:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny

(Lumber--Drying)

TSAREV, B.S.

KRECHETOV, I.V.; TSAREV, B.S.

Accelerated lumber drying by increasing the processing temperature. Der.prom. 4 no.1:3-6 Ja'55. (MLRA 8:3)

1. TSNIIMOD.
(Lumber--Drying)

TSAREV, B.S.

Installation of a wall psychrometer in lumber drying chambers. Der.prom.4 no.8:7-8 Ag 55. (MLRA 8:10)

1. TSentral'nyy Nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny
(Lumber--Drying) (Hygrometry)

KRECHETOV, I.V.; TSAREV, B.S.

Wood drying in superheated steam. Der.prom. 4 no.12:9-12 D '55.
(MLRA 9:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying)

KRECHETOV, I.V.; TSAREV, B.S.

Mechanization of transportation and stacking in lumber drying plants. Der.prom. 5 no.4:10-13 Ap '56. (MIRA 9:7)

1.TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying) (Conveying machinery)

KRECHETOV, I.V.; TSAREV, B.S.

Transportable wood-drying installations. Der.prom.5 no.7:5-7 Jl '56. (MLRA 9:9)

1.TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying) (Drying apparatus)

LEONT'YEV, N.L.; KRECHETOV, I.V.; TSAREV, B.S.; SUKHOVA, A.V.

Effect of high temperature conditions of drying on the physical and mechanical properties of wood. Der. prom. 5 no.10:3-5 O '56. (MLRA 9:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying)

ABOL', I.P., ALYAB'YEV, V.I., RANTSEV, A.A.; TSAREV, B.S.; KRASHEVSKIY, V.V., red.; FEDOROV, B.M., red. izd-va,; BACHURINA, A.M., tekhn. red., VORONITSYN, K.I., red.

[Skidding timber by means of winches in the U.S.S.R.] Nazemnaia trelevka lesa lebedkami v SSSR. [Moskva] M-vo lesnoi promyshl. SSSR, 1957. 33 p. (MIRA 11:11)

1. Direktor TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (TsNIIME)(for Voronitsyn).

(Lumbering)

TSAREV, B.S.

Investigating the kiln drying of pinewood. Der. prom. 6 no.4:4-6 Ap '57. (MLRA 10:6)

1. Tsentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki drevesiny.
(Lumber--Drying)

UGLOV, B., nauchnyy sotrudnik (Moskva); TSAREV, B.S nauchnyy sotrudnik (Moskva)

Increase the productivity of drying chambers. Prom. koop. 12 no.6: 28-29 Je '58. (MIRA 11:6)

1.TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki dereva.
(Lumber--Drying)

TSAREV, E. Eng. Maj.: Eng. Lt. Col. Cand. Tech. Sci., CHUGAYEV, Yu.

"Stlevision in Missiles Guiding," from the book Modern Military Technology, 1956, page, 212.

Translation 1114585

TSAREV, E. Capt. and CHUMAYEV, Yu. Lt. Col.

"Television in the Control of Missiles," Moscow, 1960.

SEMENIKHIN, Gennadiy Aleksandrovich (1919-); TSAREV, F., glav. red.; GONCHARENKO, Yu., tekhn. red.

[Stories about astronauts] Rasskazy o kosmonavtakh. Moskva, Voen.izd-vo M-va oborony SSSR, 1963. 46 p. (Bibliotechka zhurnala "Sovetskii voin," no.15(466)) (MIRA 17:2)

SOLECHNIK, N.Ya.; TSAREV, G.I.; SHISHKINA, A.P.

Characteristics of fiberboard prepared by the method of dry molding. Der. prom. 13 no.6:6-7 Je '64. (MIRA 17:6)

ACC NR: AT6034415 (A) SOURCE CODE: UR/0000/66/000/000/0118/0123

AUTHOR: Savitskiy, Ye. M.; Tsarev, G. L.

ORG: none

TITLE: Fine structure and properties of single crystals of tungsten

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966. 118-123

TOPIC TAGS: single crystal growth, tungsten, electron beam melting

ABSTRACT: Single crystals of tungsten with a diameter of 4 mm and a length of approximately 250 mm were grown by electron beam zone melting, at a rate of displacement of the melting zone of about 5 mm min, and at a working vacuum of 5×10^{-5} mm Hg. The number of passes varied from 1 to 9. The impurity content in the single crystals is shown in a table. Oxygen was determined by the method of vacuum melting, carbon by the combustion method, and the metallic impurities spectroscopically. For purposes of electron microscope examination, thin films were prepared by electrolytic polishing in a 2% NaOH solution. Experimental results are exhibited in tabular form. The following main conclusions were reached: 1) in single crystals of tungsten grown by the electron beam zone melting method there is observed

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ACC NR: AT6034445

a cellular growth structure and individual separations of tungsten carbide, W_2C. The boundaries of the cells are enriched with carbides; 2) under conditions of vacuum melting, tungsten oxides and nitrides are, evidently, completely dissociated and volatilized; 3) zone melting of tungsten in a vacuum does not lead to elimination of carbon. With an increase in the number of passes, the carbon content increases somewhat, while the carbides take on a coarser grain structure; 4) increase in the number of passes leads to purification from metallic impurities; 5) the ductility of the single crystals of tungsten is directly connected with the amount and the dimensions of the tungsten carbides. Orig. art. has: 5 figures and 2 tables.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 003/ OTH REF: 002

Card 2/2

L 2793-66 EWT(l)/EWT(m)/ETC/EPF(n)-2/EWG(m)/T/EWP(t)/EWP(b)/EWA(c)
ACCESSION NR: AP5021377 IJP(c) JD/JG/GG UR/0120/65/000/004/0248/0250
621.365.91:669—172

AUTHOR: Savitskiy, Ye. M.; Burkhanov, G. S.; Tsarev, G. L.; Bokareva, N. N.

TITLE: Growing of single crystals of refractory metals and alloys with desired crystallographic orientation by electron-beam zone melting

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 248-250

TOPIC TAGS: crystal, single crystal, crystal growing, metal crystal, alloy crystal, refractory metal

ABSTRACT: A method for growing single crystals of pure refractory metals and alloys with desired orientation by electron-beam zone melting is described. The only thing necessary is to have a seed with the desired orientation. The seed is mounted vertically and the bar of metal or alloy is placed 1 mm above the seed (see Fig. 1 of Enclosure). The electron beam melts both the seed and the bar and, as it rises, the metal crystallizes with the same orientation as that of the seed. For growing alloy single crystals, the seed of one of the metals can be used. The initial portion of the single crystal will have a lower

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L 2793-66
ACCESSION NR: AP5021377

content of the other component, but after a distance of 20 mm, a balanced composition is obtained. Single crystals of Mo, W, Ta, Nb, Zr, Re, and their alloys were grown by this method. The orientation of the single crystal differs from that of the seed by 2° max. Orig. art. has: 4 figures. [AZ]

ASSOCIATION: Institut metallurgii, Moscow (Institute of Metallurgy)

SUBMITTED: 27Nov64 ENCL: 01 SUB CODE: MM

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4103

Card 2/3

L 2793-66
ACCESSION NR: AP5021377

ENCLOSURE: 01

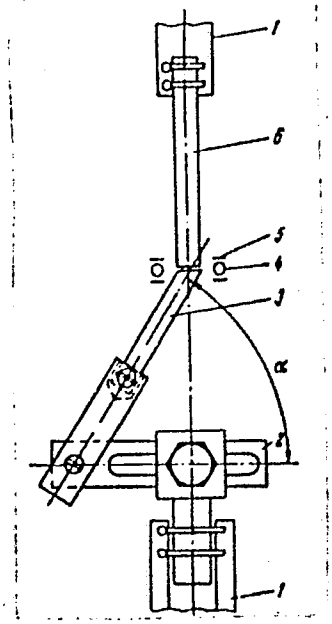
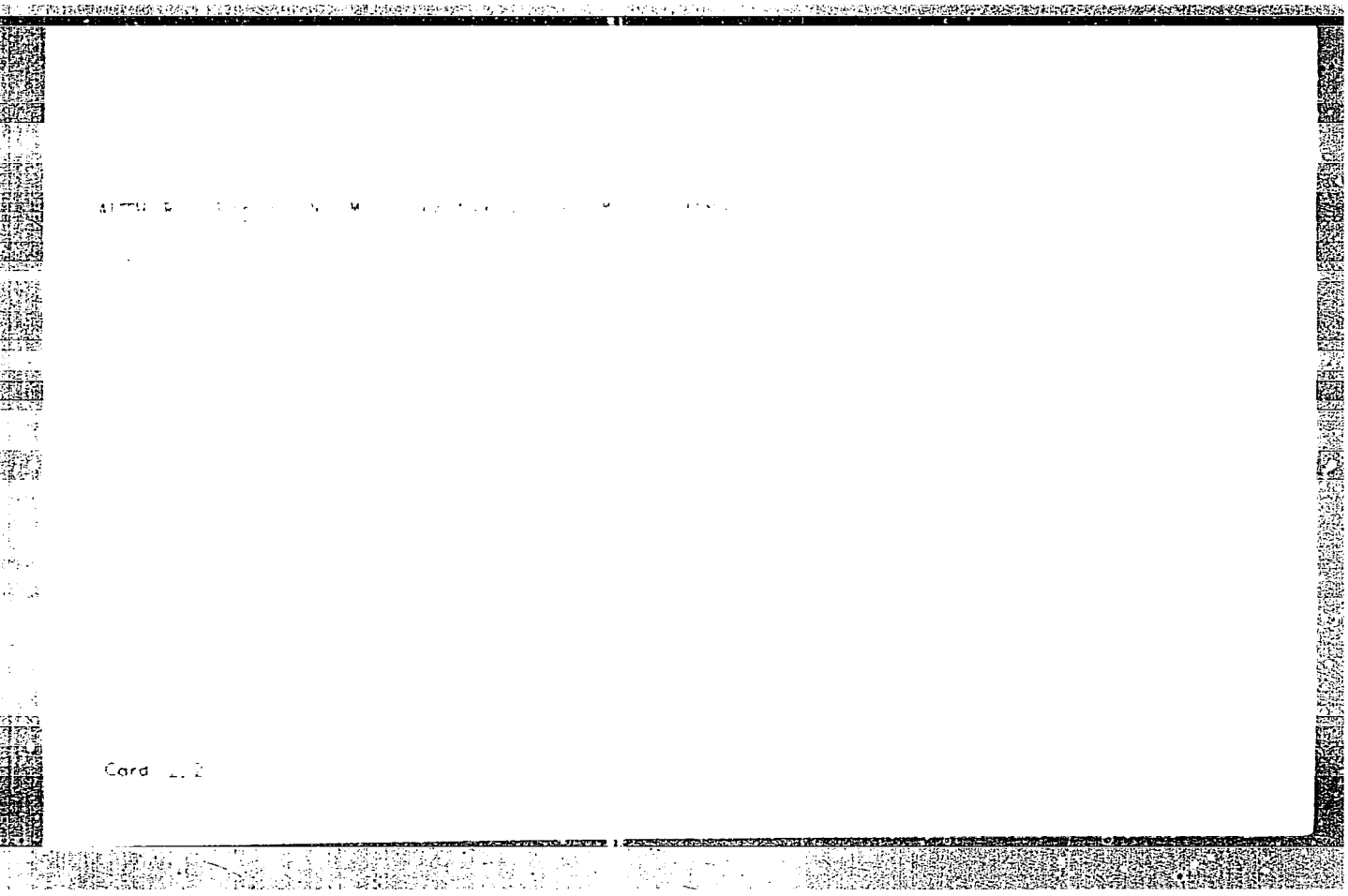


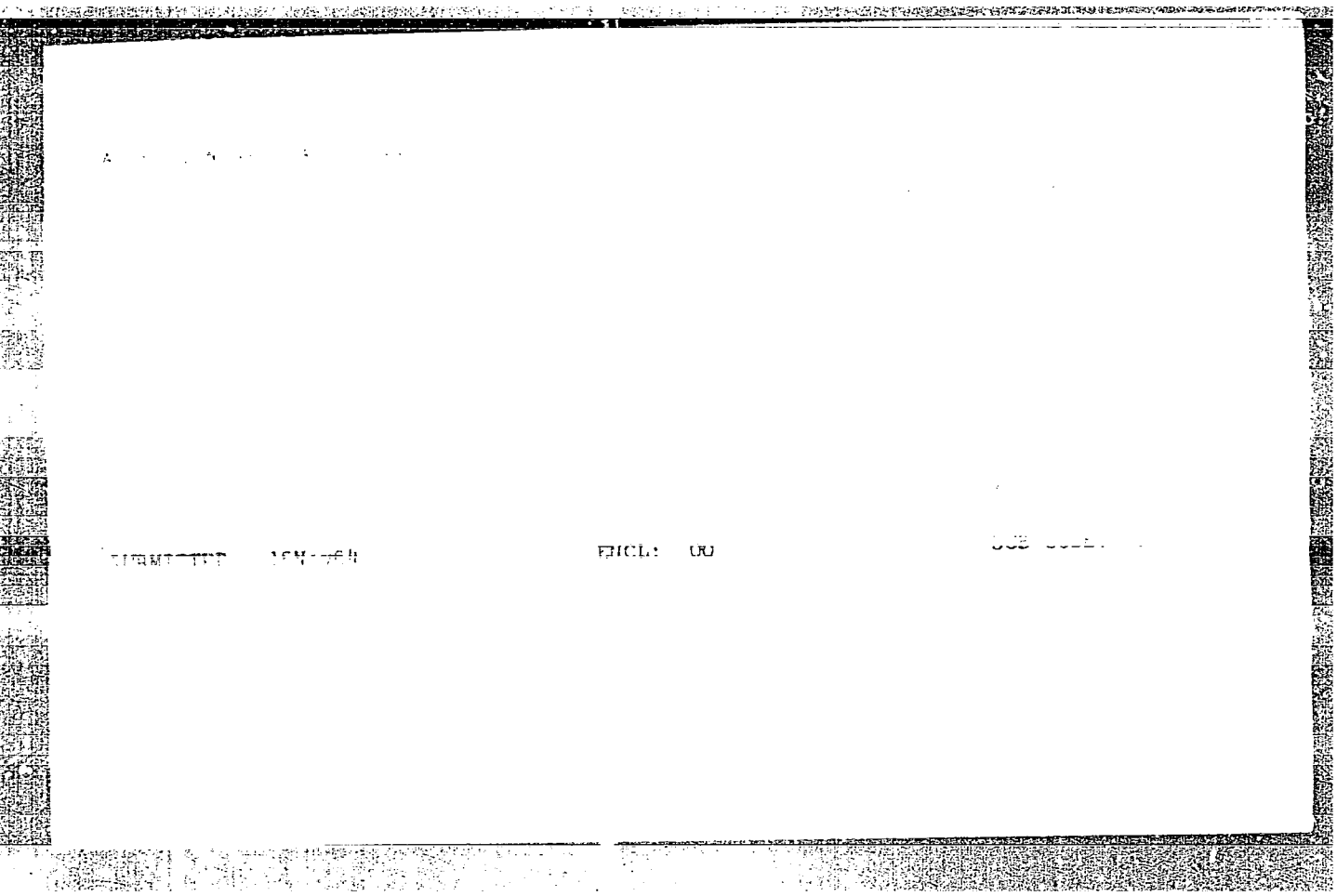
Fig. 1. Layout of the crystal-growing unit

1 - Top and bottom clamps; 2 - seed holder; 3 - seed electron gun; 4 - cathode; 5 - focusing system; 6 - metal or alloy bar.

BVK
Card 3/3



Card



TSARKV, G.P.; ANDRONNIKOV, V.V.; KOBYCHEVA, A.A.; ANNENKOVA, A.A.; VAKHMISTROVA, M.P., red.; MEDVEDEVA, S.G., red.; BEKMUKHAMEDOV, K., red.; EL'KONINA, F.I., red.

[Kazakhstan; on the 40th anniversary of the Great October Socialist Revolution; a concise reference manual and bibliography] Kazakhskaia SSR; k 40-letiiu Velikoi Oktiabr'skoi sotsialisticheskoi revolutsii; kratkie spravochnye svedeniia i ukazatel' literatury. Alma-Ata, 1957. 233 p. (MIRA 11:10)

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(Kazakhstan--Statistics) (Bibliography--Kazakhstan)

TSAREV, G.P., inzh.

Laboratory methods of determining the shear strength of cohesive soils. Trudy Gidroproekta 3:171-177 '60. (MIRA 13:7)

1. Otdel geolgicheskikh izyskaniy Vsesoyuznogo poruektno-izyskatel'skogo i nauchno-issledovatel'skogo instituta "Gidroproyekt" imeni S.Ya.Zhuka.
(Soil mechanics)

TSAREV, I.I., inzhener.

Medium and small capacity standard concrete and mortar mixing plants.
Mekh.stroi.12 no.3:11-14 M '55. (MLRA 8:4)
(Concrete)

TSAREV, I.I., inzh.

S-285B continuous-action mobile mortar-mixing unit. Mekh.stroi 15 no.7:20 Jl '58. (MIRA 11:9)
(Mixing machinery)

TSAREV, I.I.

Preface. Sbor.rab.Kursk.gidromet.obzerv. no.[illegible]

Mean annual and spring runoff in the regions of the Kursk Magnetic Anomaly. Ibid.:5-11 (MIRA 13:9)

TSAREV, I. N., Cand Tech Sci, "Use of ejectors in gas-collecting and gas-distributing networks of the gas and petroleum industry." Moscow, 1960. (Moscow Order of Labor Red Banner Inst of Petrochemistry and Gas Industry im I. M. Gubkin). (KL, 3-61, 221).

NIKONOROV, A.P.; ORLOVA, L.N.; TSAREV, I.V.

Unit for measuring the surface roughness of pinion teeth.
Izm.tekh. no.5:14 My '60. (MIRA 14:5)
(Gear cutting)

TSAREV, K.

The results of perseverance. Okhr.truda i sots.strakh. no.10: 33-34 O '59. (MIRA 13:2)

1. Predsedatel' komissii okhrany truda zavkoma zavoda "Serp i molot, "Khar'kov."
(Kharkov--Industrial hygiene)

TSAREV, K.

Efficient schedule for buses on intercity routes. Avt.transp.34 no.5:10-11 My '56. (MIRA 9:9)

1.Zamestitel' direktora 3-go avtobusnogo parka Moskvy.
(Motorbus lines)

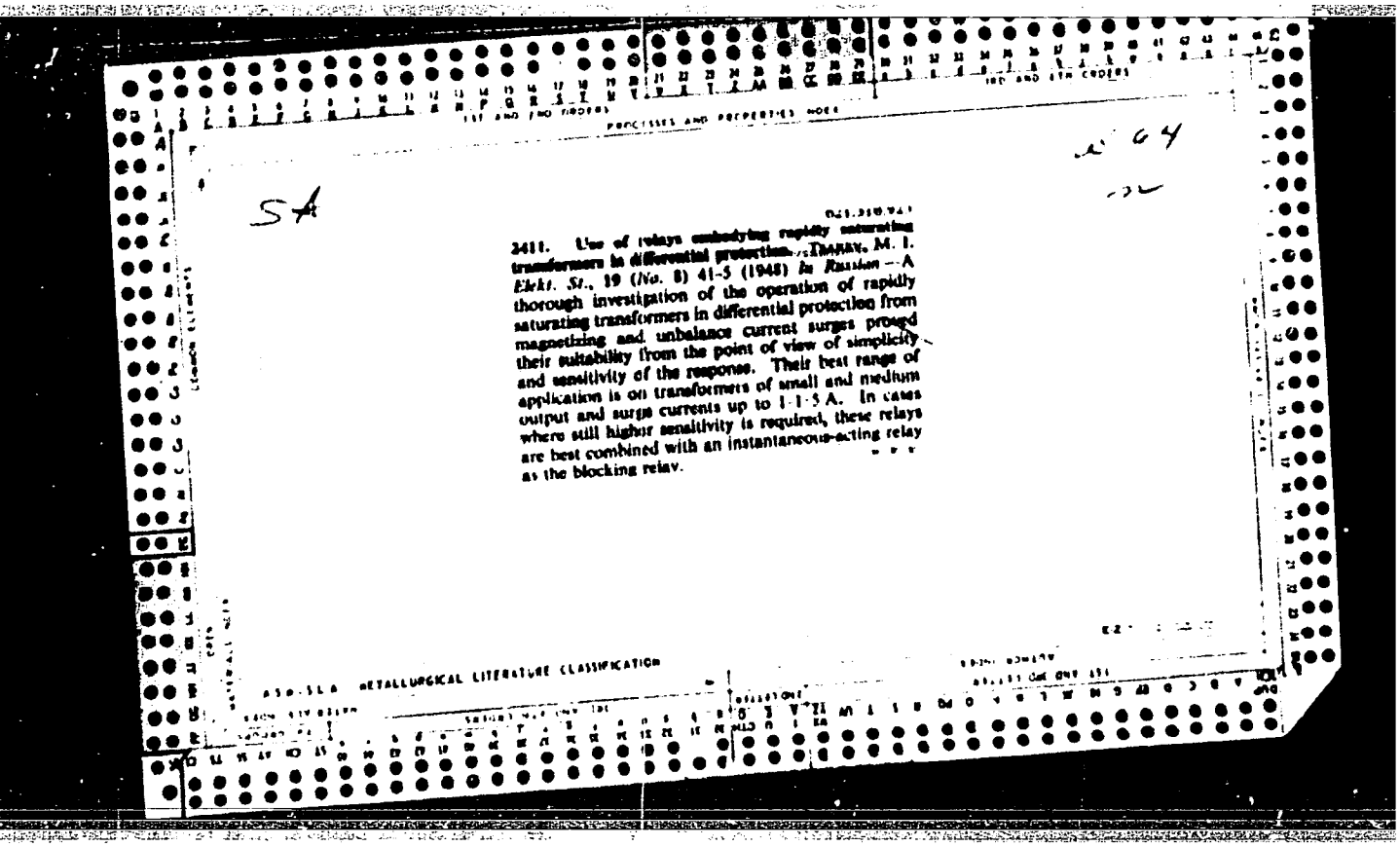
MAMIKONYANTS, L.; TSAREV, M.; GADZEVICH, V.I., inzh.,red.; VORONIN, K.P., tekhn.red.

[Results of operating relay-protection and electric automatic control equipment in power systems of the Ministry of Power Stations during 1955] Itogi ekspluatatsii releinoi zashchity i elektroavtomatiki v energosistemakh Ministerstva elektrostantsii za 1955 g. Moskva, Gos. energ. izd-vo. 1956. 14 p. (Moscow. TSentral'naia nauchno-issledovatel'skaia elekrotekhnicheskia laboratoriia. Informatsionnye materialy no.19). (MIRA 11:7)

1.Zamestitel' direktora po nauchnoy chasti, glavnyy inzhener TSentral'noy nauchno-issledovatel'skoy elektrotekhnicheskoy laboratorii Ministerstva elektrostantsiy SSSR (for Mamikonyants) 2.Zaveduyushchiy laboratoriyey releynoy zashchity TSentral'noy nauchno-issledovatel'skoy elektrotekhnicheskoy laboratorii Ministerstva elektrostantsiy SSSR (for TSarev).
(Electric relays) (Automatic control) (Electric power distribution)

ABATUROV, A.M.; TSAREV, M.A.

Contemporary relief formation in flood plains, as exemplified by the upper Volga Polesye; deformations of river banks in woodlands. Zhizn' Zem. no.1:222-230 '61. (MIRA 15:6)
(Polesye--Erosion)



2411. Use of relays embodying rapidly saturating transformers in differential protection. THRAY, M. I. *Elekt. St.*, 19 (*No.* 8) 41-5 (1948) *In Russian* — A thorough investigation of the operation of rapidly saturating transformers in differential protection from magnetizing and unbalance current surges proved their suitability from the point of view of simplicity and sensitivity of the response. Their best range of application is on transformers of small and medium output and surge currents up to 1·1·5 A. In cases where still higher sensitivity is required, these relays are best combined with an instantaneous-acting relay as the blocking relay.

TSAREV, M. I.

"Analysis of the Differential Protection of Transformers and Development of Methods for Its Improvement. Thesis for degree of Cand. Technical Sci. S[illegible]. 1 Apr 49, Moscow Order of Lenin Power Engineering Inst imeni V. M. Molotov.

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva. Jan-Dec 1949.

TSAREV, M. I.

FA 51/49T12

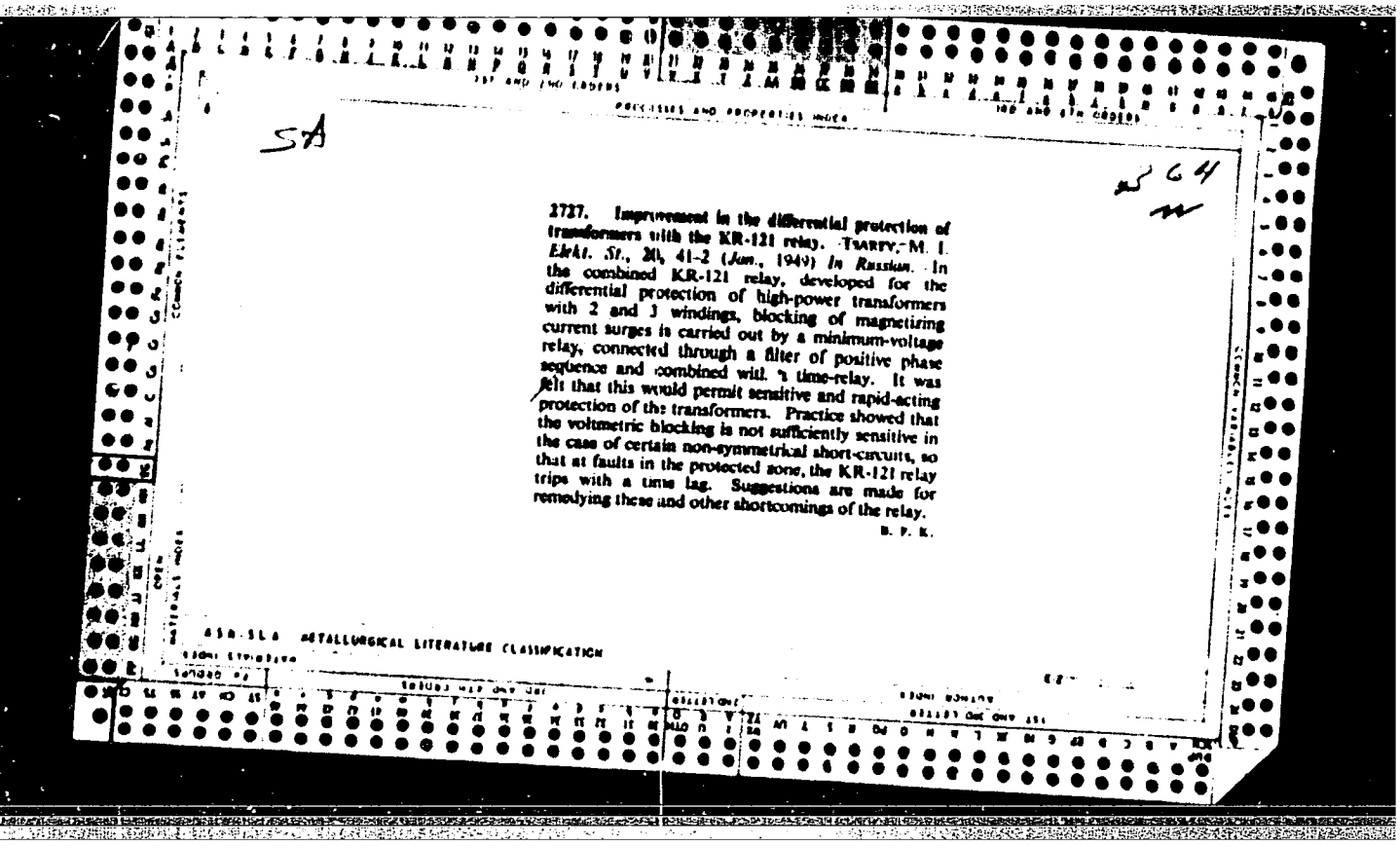
USSR/Electricity Jul 49
Generators
Transformers

"Differential Protection of Generators With Auxiliary Quickly Saturating Transformers," M. I. Tsarev, Cand Tech Sci, 4 pp

"Elek Stants" 20 No 7 p. 38-44

Use of subject transformers in differential protection of generators is an effective method to prevent faulty operation of the protection arising from surges of unbalance currents in transient conditions during short circuits and during self-synchronization. This is quite important, since 10% of the total number of operations of differential protection were incorrect due to large unbalance currents.

[redacted] 51/49T12



2727. Improvement in the differential protection of transformers with the KR-121 relay. TSARTV, M. I. *Elektr. St.*, 20, 41-2 (*Jun.*, 1949) *In Russian.* In the combined KR-121 relay, developed for the differential protection of high-power transformers with 2 and 3 windings, blocking of magnetizing current surges is carried out by a minimum-voltage relay, connected through a filter of positive phase sequence and combined with a time-relay. It was felt that this would permit sensitive and rapid-acting protection of the transformers. Practice showed that the voltmetric blocking is not sufficiently sensitive in the case of certain non-symmetrical short-circuits, so that at faults in the protected zone, the KR-121 relay trips with a time lag. Suggestions are made for remedying these and other shortcomings of the relay.

B. P. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TSAREV, M. I.

PA 162T27

USSR/ Electricity - Relay Protection Transformers, Current   Jul 50

"Differential Protection of Bus Bars by Auxiliary Quick-Saturation Current Transformers," M. I. Tsarev, Cand Tech Sci

"Elek Stants" No 7, pp 38-40

Describes present differential protection by instantaneous current relays as unsatisfactory observing that a number of breakdowns occurred between 1945 and 1948. Includes details and

[redacted]   162T27

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diagrams of new relay type ET-521 with quick-saturation current transformer developed by TsNIEL (Cen Res Elec Eng Lab), and recomments future use.

[redacted]   162T27

1. SOLOV'YEV, I. I., Prof.; ZEYLIDSON, Ye. D., Eng.; KRIKUNCHIK, A. P., Eng.; MOSKALEV, A. G., Eng.; POPOV, I. N., Eng.; TSAREV, M. I., Eng.; KHOMERTOV, B.A.

2. USSR (600)

4. Sirotinskii, E. L.

7. Remarks to Ye. L. Sirotinskiy's article "Symbols and rules for drawing schemes of relay protection and automaticity." Eletrichestvo, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953, Unclassified.

YERMOLENKO, V.M., red.; KAZANSKIY, V.Ye., inzh., red.; KNYAZEVSKIY, B.A., red.; MALOV, V.S., red.; SYROMYATNIKOV, I.A., doktor tekhn.nauk, prof., red.; TSAREV, M.I., kand.tekhn.nauk, red.; CHERNOBROVOV, N.V., red.; LARIONOV, G.Ye., tekhn.red.

[Electric relays, automatic and remote control of electric power systems; papers of a scientific conference on problems of electric relays, automatic and remote control] Releinaia zashchita, avtomatika i telemekhanika energosistem; materialy nauchno-tekhnicheskoi konferentsii [po voprosam releinoi zashchity, elektricheskoi avtomatiki i telemekhaniki]. Moskva, Gos. energ. izd-vo, 1957. 231 p. (MIRA 11:3)

1. Nauchno-tekhnicheskoye obshchestvo energeticheskoy promyshlennosti. Moskovskoye pravleniye. 2. Mezhdunarodnye elektricheskiye svyazi SSSR (for Syromyatnikov). 3. TSentral'naya nauchno-issledovatel'skaya elektrotekhnicheskaya laboratoriya (for TSarev). 4. Gosudarstvennyy trest po organizatsii i ratsionalizatsii elektrostantsii (for Kazanskiy)

(Electric relays) (Automatic control)
(Remote control)

VELICHKIN, Oleg Dmitriyevich, inzh.; LYSENKO, Yefim Vol'fovich, inzh.; SMORODINSKIY, Yakov Mikhaylovich, kand.tekhn.nauk; MANIN, I.A., otv. za vypusk; TSAREV, M.I., red.; SUKHAREVA, R.A., tekhn.red.

[Use of transistor diodes and triodes in relay guarding devices and in the automatic control of power systems] Primenenie poluprovodnikovykh diodov i triodov v ustroistvakh releinoi zashchity i avtomatiki energosistem. Moskva, Ob-vo po rasprostraneniiu polit. i nauchnykh znanii RSFSR. Mosk.dom nauchno-tekhn.propagandy im. F.E.Dzerzhinskogo, 1958. 68 p. (Peredovoi opyt proizvodstva. Ser."Promyshlennaia energetika," nos.11-12) (MIRA 13:2)

(Transistors) (Automatic control)

TSAREV, M. I.

8(2)

AUTHOR: Osadchenko, N. I., Engineer SOV/105-59-10-2?/25

TITLE: Conference on the Results and Prospects of the Development of Soviet Relay Construction

PERIODICAL: Elektrichestvo, 1959, Nr 10, pp 86-87 (USSR)

ABSTRACT: An All-Union Scientific-technical Conference was held at Cheboksary from July 7 to 11, 1959. It dealt with the results obtained in relay construction during the last nine years. Furthermore, the prospects of the further development of relay construction, and the protection and automation of electric installations were outlined. The Conference was attended by representatives of scientific research institutes, planning institutes and colleges, special laboratories, planning organizations, of the Soyuzglavenergo (All-Union Main Power Administration) and a number of power systems. The representatives of the Cheboksarskiy elektroapparatnyy zavod (Cheboksary Plant for Electric Apparatus) M. M. Kulygin and M. B. Tsfasman reported on the achievements of the Plant in the modernization and the development of new highly sensitive and high-speed relays and protective circuits. V. L. Fabrikant, Candidate of Technical Sciences, spoke

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"Developments in Foreign Relay Construction". Professor I. A. Syromyatnikov, Doctor of Technical Sciences, spoke about his impressions from a tour to the United States and delivered a report on "The Ways of Further Development of Soviet Power Engineering". Engineer V. M. Yermolenko spoke about "The Principles Underlying the Design of Complicated Alternating Control Circuit Protective Devices". M. I. Tsarev, Candidate of Technical Sciences, spoke about the work of the VNIIE for the development of power-supply units. Ye. D. Sapir, Candidate of Technical Sciences, delivered a speech "On the Usefulness of Developing Protective Devices With a Sensitive Electromechanical Element". Engineer Yu. A. Gavarenko: "Prospects of the Development of Relay Protection With Semiconductors". Engineer V. I. Grinshtern reported on the development of the resistor- and power relays with semiconductors. Professor A. D. Drozdov, Doctor of Technical Sciences, spoke about the prospects of further employment of saturated steels in relay construction. The manufacture of large oil- and air circuit breakers by the plants "Elektroapparat" and "Uralelektroapparat" was sharply criticized. The Conference pointed out that automatic frequency- and power controllers,

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grouped installations for excitation and power control, modern automatic synchronizers, and automatic regulators for the batteries of static condensers which are indispensable in the full automation of electric installations have not yet been provided for in the Soviet manufacturing program.

Card 3/3

STEPUNIN, S.Ye., inzh.; STREIKOV, V.M., inzh.; TSAREV, M.I., inzh.;
TSAREV, M.I., kand.tekhn.nauk

Improvement of three-phase automatic reclosing systems.
Elek.sta. 31 no.5:69-74 My '60. (MIRA 13:8)
(Electric switchgear) (Electric lines)

S/196/61/000/012/014/029
E194/E155

AUTHORS: Tsarev, M.I., and Shingarev, M.M.

TITLE: Service experience with gas-pressure relay protection transformers in power systems of the USSR

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.12, 1961, 13, abstract 12E 81. (Elektr. stantsii, 32 - no.7, 1961, 65-67)

TEXT: Gas pressure (or Buchholz) relay protection has advantages over other methods of protecting transformers and forms a good supplement to them; moreover, when a gas-pressure relay is used to disconnect the transformer the differential and other current protective arrangements of the transformer need not be so sensitive. In recent years the opinion has been expressed that gas-pressure relays are insufficiently reliable and so operate falsely. The VNIIE has made an analysis of the operation over the last eight years of gas-pressure relays arranged to disconnect transformers. Since the number of cases of correct operation of the relays depends to a considerable

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Service experience with gas-pressure.. S/196/61/000/012/014/029
E194/E155

extent upon the occurrence of damage to the equipment protected, the reliability and quality of the protection is best assessed by the frequency of incorrect operation, i.e. by the average number of years for which a single relay serves before operating falsely. Allowance should also be made for the frequency of correct operations. Over an eight-year period the occurrence of incorrect operation of gas-pressure relays was once in 124 years. This is better than corresponding data for previous years. The overwhelming majority of cases of incorrect operation of gas-pressure relays were due to defects of erection or to service deficiencies. The analysis indicates that there is no justification for widespread use of gas-pressure relays simply as alarm signals. However, it may sometimes be necessary, for a short or long period, to arrange for the relay only to give a signel when it is known in advance that it may operate falsely (in transformers with forced cooling, or in those operating near blasting operations, etc.).

[Abstractor's note: Complete translation.]

Card 2/2

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[Handbook on high-voltage power distribution networks] Spravochnik po elektricheskim setiam vysokogo napriazheniia. [By] S.V. Alekseev i dr. Izd.4., perer. i dop. Pod obshchei red. M.V. Khomiakova i I.A.Baumshteina. Moskva, Gosenergoizdat, 1962. 559 p. (MIRA 15:12)
(Electric power distribution--Handbooks, manuals, etc.)
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Boris Iosifovich Kustov; obituary. Koks i khim. no.2:64 '55. (MLRA 9:3)
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(Moroz, Mikhail IAkovlevich, 1902?-1956)

TSAREV, M.N.

AFONIN, K.B.; BURTSEV, K.I.; BYSTROV, S.N.; VINETS, G.B.; VODNEV, G.G.; VORONIN, A.S.; GEVLICH, A.S.; GRYAZNOV, N.S.; GUDIM, A.F.; GUSYATINSKIY, M.A.; DVORIN, S.S.; DIDENKO, V.Ye.; DMITRIYEV, M.M.; DONDE, M.M.; DOROGOBID, G.M.; ZHDANOV, G.I.; ZAGORUL'KO, A.I.; ZELENETSKIY, A.G.; IVASHCHENKO, Ya.N.; KAFTAN, S.I.; KVASHA, A.S.; KIREYEV, A.D.; KLISHEVSKIY, G.S.; KOZYREV, V.P.; KOLOBOV, V.N.; LGALOV, K.I.; LEYTES, V.A.; LERNER, B.Z.; LOBODA, N.S.; LUBINETS, I.A.; MANDRYKIN, I.I.; MUSTAFIN, F.A.; NEMIROVSKIY, N.Kh.; NEFEDOV, V.A.; OBUKHOVSKIY, Ya.M.; PERTSEV, M.A.; PETROV, I.D.; PODOROZHANSKIY, M.O.; POPOV, A.P.; RAK, A.I.; REVYAKIN, A.A.; ROZHKOV, A.P.; ROZENGAUZ, D.A.; SAZONOV, S.A.; SIGALOV, M.B.; STOMAKHIN, Ya.B.; TARASOV, S.A.; FILIPPOV, B.S.; FRIDMAN, N.K.; FRISHBERG, V.D.; KHAR'KOVSKIY, K.V.; KHOLOPTSEV, V.P.; TSAREV, M.N.; TSOGLIN, M.E.; CHERNYY, I.I. CHERTOK, V.T.; SHELKOV, A.K.

Samuil Berisovich Bamme. Koks i khim. no.6:64 '56. (MLRA 9:10)
(Bamme, Samuil Berisovich, 1910-1956)